Mechatronics in a Zimbabwean Girl's World: Cultivating Interest in STEM Among Female Students in Zimbabwe by Using Mechatronics

Matonda, Tanatswa (School: Peterhouse Girls School)
Mafara, Tadiswa-Chloe (School: Peterhouse Girls School)

In Zimbabwe, only 19% of female students graduate from STEM (science, technology, engineering, and mathematics) subjects, compared to 39% of male students. This project unveils the barriers that rural girls in Zimbabwe face in accessing educational opportunities, with a particular focus on STEM education. It is based on a study of five rural secondary-school girls and five privileged secondary-school girls in the Harare province. The project found individual, institutional, and societal hurdles to STEM education, revealing both systemic and socio-cultural challenges that policy and practice actors can address. We provide specific actionable ideas as well as an example of a method that we have begun to address the gap locally. Using drones and aeronautic concepts, we tested the hypothesis that flying/ creating drones can change thinking processes to allow the stimulation of curiosity and motivation in female students to engage in STEM investigations. To test this, we built a drone with each group and conducted surveys at each critical point of the construction of the drone to investigate their curiosity and motivation toward STEM. Data was analyzed using a paired samples t-test as well as an independent samples t-test. From these results, we saw that there was an increase in positive change in thought processes and measurable motivation of the girls. Further experiments will include advanced drone designs and a wider range of STEM projects to continue advancing our method.

Awards Won:
Second Award of $2,000